

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: ORTHODONTIC WIRE AND METHOD FOR MAKING SAME

Preliminary Amendment: CLAIM AMENDMENTS

1. (Currently amended) Orthodontic wire, in association with attachments bonded on the teeth, to correct position anomalies thereof, ~~made of~~ comprising:

a material having high mechanical performances and very low friction coefficient on said attachments, ~~characterized in that~~ said material is being defined by a basic structure ~~made comprised~~ of a titanium-molybdenum alloy comprising, in ~~its~~ an outer surface layer thereof, titanium nitrides of the type TiN, Ti₂N, free of titanium oxide.

2. (Currently amended) Method for making a metallic wire according to claim 1, ~~characterized in that, in order to form the~~ said method comprising the steps of:

forming titanium nitrides of ~~the~~ type TiN, Ti₂N in ~~the~~ an external superficial layer of the ~~a~~ titanium-molybdenum alloy,

performing a treatment of superficial implantation of N⁺ and N⁺⁺ ions ~~is performed~~, and

working in an enclosure under vacuum, at a temperature lower than 450°C.

3. (Currently amended) Method according to claim 2, ~~characterized in that the treatment wherein said step of~~ performing the treatment of superficial ionic implantation ~~of the~~ titanium-molybdenum alloy is performed in two consecutive phases.

4. (Currently amended) Method according to claim 3, ~~characterized in that the further comprising the steps of:~~

~~first submitting~~ titanium-molybdenum alloy ~~is first submitted~~ to a phase of depassivation by non-reactive cold plasma by introducing an inert gas yet progressively increasing the temperature, then

~~submitting~~ to a phase of nitriding by cold plasma by introducing a mixture of an inert gas and nitrogen.

5. (Currently amended) Method according to claim 4, ~~characterized in that, wherein said step of performing treatment~~ during the two phases of the treatment of superficial implantation of N^+ and N^{++} ions, ~~said inert gas is comprised of~~ argon ~~is used as inert gas~~.

6. (Currently amended) Method according to ~~any of claims 4 or 5, characterized in that Claim 4, wherein during the nitriding phase, forming nitrides step further comprises:~~

~~using~~ proportions of inert gas and nitrogen that are used are adapted to ~~the~~ volume of ~~the~~ ~~an~~ enclosure in which ~~the~~ ~~phase~~ ~~said step~~ takes place, and

comprising enough nitrogen to permit ~~its~~ implantation thereof and enough argon to dissociate the nitrogen.

7. (Currently amended) Method according to ~~one of claims 4 through 6, characterized in that the Claim 4, further comprising:~~

~~submitting a~~ titanium-molybdenum alloy ~~is submitted~~ to the depassivation phase for about 45 minutes, then to the nitriding phase for about 200 minutes.

8. (Currently amended) Method according to ~~any of claims 2 through 7, characterized in that the Claim 2, said step of performing~~ treatment of superficial ionic implantation of the titanium-molybdenum alloy is completed by a slow cooling phase.